

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-281579

(43)Date of publication of application : 27.10.1995

(51)Int.Cl.

G03G 21/16

G03G 15/08

(21)Application number : 06-073341

(71)Applicant : SHARP CORP

(22)Date of filing : 12.04.1994

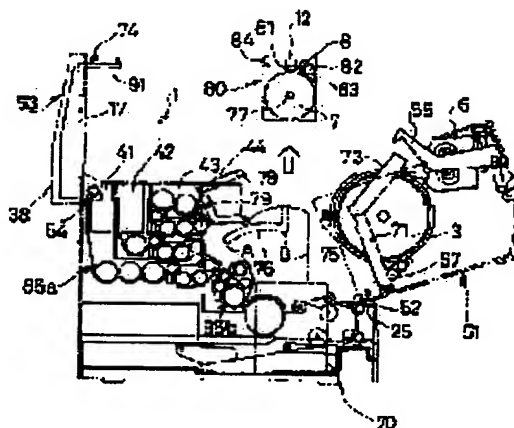
(72)Inventor : FUKUNAGA KEIZO
TATEISHI YOSHINOBU
AKAGAWA TAKETO
TERADA MITSUYOSHI

(54) IMAGE FORMING DEVICE

(57)Abstract:

PURPOSE: To easily perform the check and maintenance without necessitating the extension of setting space by dividing the upper part of a device main body into the front and the rear hands, attaching a transferring body and a fixing device to the one hand in freely attachably and detachably, and arranging the developing tank and the image carrier on the other.

CONSTITUTION: The upper part of the device main body 1 is divided into two, the front and the rear parts. The transfer side divided cap part 51 as the divided cap of the one side, composed detachably from the detaching line shown as an alternate long and short dash line, is arranged in a state of freely opening and closing by turning upward centering around the turn supporting point 52 provided in the vicinity of the hand fed transporting path 25. Inside the transfer side divided cap part 51, the transfer drum 3 and the fixing unit 6 are attached freely attachably and detachably. Moreover, the developing side divided cap part 53 as the divided cap of the other side, is composed of the optical system unit 17 and the top surface cover 38 in a state of freely opening and closing by turning upward centering around the turn supporting point 54 disposed in the top end part of the rear part of the device main body 1. The toner cartridges 41 to 44 as the developing tanks for the plural color are arrange below the developing side divided cap part 53.



LEGAL STATUS

[Date of request for examination] 06.02.1998

[Date of sending the examiner's decision of rejection] 07.03.2000

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The image support by which the toner image based on an electrostatic latent image is formed in a front face, and the developer which has the developer tank allotted to the perimeter of this image support, In image formation equipment equipped with the imprint object which holds the conveyed recording paper between image support, and imprints the toner image of image support on the recording paper, and the anchorage device established in the toner image of the recording paper While 2 ****s of the upper parts of the body of equipment are made into order and one [at least] division covering device is formed free [closing motion] of rotation Image formation equipment characterized by allotting the above-mentioned developer tank and image support under the division covering device of another side while the interior of the division covering device of the method of Norikazu Kami is equipped with the above-mentioned imprint object and an anchorage device free [attachment and detachment].

[Claim 2] While being formed that the division covering device of above-mentioned another side can be opened and closed, under the division covering device of this another side While the impaction efficiency member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position The above-mentioned developer is image formation equipment according to claim 1 characterized by being prepared so that balking may become free when image support evacuates to an evacuation location.

[Claim 3] While being formed that the division covering device of above-mentioned another side can be opened and closed, under the division covering device of this another side The support locations migration member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position. And this interior of a proposal is image formation equipment according to claim 1 characterized by being formed that image support should be guided so that sampling may become free from an evacuation location.

[Claim 4] Image formation equipment according to claim 1 characterized by forming the hold section for holding a waste toner in the interior of the above-mentioned imprint object.

[Translation done.]

*** NOTICES ***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to image formation equipment equipped with image support, a developer, an imprint object, and anchorage devices, such as a laser beam printer and a copying machine.

[0002]

[Description of the Prior Art] After pulling out in the direction of this side and performing exchange of a toner on the occasion of exchange of the toner as part [image-formation equipment] of inspection and repair, making units, such as a photo conductor drum and a developer tank, slide along with a rail from the side face of the body of equipment as indicated by JP,1-32984,B, for example, in image-formation equipments, such as the conventional laser beam printer and a copying machine, there are some which have structure which puts back those units in the body of equipment again.

[0003] Moreover, the development counter which held each toner, such as yellow, a Magenta, cyanogen, or black, cleaning equipment, an electrification machine, and a photo conductor drum are stored in the process cartridge of one, and carry out unitization to JP,3-67272,A, and the full color image formation equipment constituted so that this unit might be taken in and out of on the body of equipment is proposed.

[0004]

[Problem(s) to be Solved by the Invention] However, with the image formation equipment in the above-mentioned conventional former, since it is necessary to contain the rail member for a slide inside the body of equipment, there is a problem in respect of the miniaturization of the body of equipment. Moreover, since the reinforcement of the supporter material which supports the rail for making the unit concerned slide to the front and it since the weight of a unit will become large if a multicolor developer tank is equipped must be secured, the weight of equipment also becomes large and lightweight-izing is difficult for it.

[0005] Furthermore, since it is the two-step method which faces exchanging units, generally once pulls out a unit from an equipment side face, raises a unit upward if needed after that, and is removed from the body of equipment, while exchange of a unit takes time and effort, it is necessary to take the large installation tooth space of equipment in consideration of the tooth space of unit exchange.

[0006] Moreover, since it is necessary to remove a photo conductor drum unit from the body of equipment at the time of exchange of a developer tank, in order not to damage the drum front face of a photo conductor drum unit which removed, and in order to prevent the damage by the extraneous light, it is necessary to attach the shutter for opening and closing a drum front face. Consequently, it has the trouble that cost reduction-ization of a photo conductor drum unit cannot be attained.

[0007] On the other hand, since it stores in the process cartridge of one in the case of the latter image formation equipment and it is carrying out unitization of the four developer tanks which held each toner, such as a photo conductor drum or yellow, a Magenta, cyanogen, or black, the weight of a unit simple substance becomes very large. Therefore, since the activity which removes a heavy process cartridge from the body of equipment is needed at every exchange of a toner, the supply activity of a toner has the trouble of being very a heavy burden for an operator.

[0008] This invention is made in view of the above-mentioned conventional trouble, and the purpose is in offering the image formation equipment which can be inspected and repaired easily, without aiming at increase of an installation tooth space.

[0009]

[Means for Solving the Problem] In order that the image formation equipment of invention according to claim 1 may solve the above-mentioned technical problem The image support by which the toner image based on an electrostatic latent image is formed in a front face, and the developer which has the developer

tank allotted to the perimeter of this image support, In image formation equipment equipped with the imprint object which holds the conveyed recording paper between image support, and imprints the toner image of image support on the recording paper, and the anchorage device established in the toner image of the recording paper While 2 ****s of the upper parts of the body of equipment are made into order and one [at least] division covering device is formed free [closing motion] of rotation While the interior of the division covering device of the method of top Norikazu is equipped with the above-mentioned imprint object and an anchorage device free [attachment and detachment], it is characterized by allotting the above-mentioned developer tank and image support under the division covering device of another side.

[0010] In order that the image formation equipment of invention according to claim 2 may solve the above-mentioned technical problem While the division covering device of above-mentioned another side is also formed free [closing motion], in image formation equipment according to claim 1 under the division covering device of this another side While the support locations migration member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position The above-mentioned developer is characterized by being prepared so that balking may become free, when image support evacuates to an evacuation location.

[0011] In order that the image formation equipment of invention according to claim 3 may solve the above-mentioned technical problem While the division covering device of above-mentioned another side is also formed free [closing motion], in image formation equipment according to claim 1 under the division covering device of this another side The support locations migration member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position. And this interior of a proposal is characterized by being formed that image support should be guided so that sampling may become free from an evacuation location.

[0012] The image formation equipment of invention according to claim 4 is characterized by forming the hold section for holding a waste toner in the interior of the above-mentioned imprint object in image formation equipment according to claim 1, in order to solve the above-mentioned technical problem.

[0013]

[Function] According to the configuration of claim 1, when a paper jam is caused between an imprint object and image support, for example Since 2 ****s of the upper parts of the body of equipment are made into order, and they are formed in it free [closing motion by rotation] for one [at least] division covering device and the interior of the division covering device of the method of top Norikazu is equipped with the above-mentioned imprint object and the anchorage device By opening the division covering device of one of these, the contact condition of image support and an imprint object is canceled. Consequently, the recording paper currently held between image support and an imprint object can be exposed, and the recording paper can be removed easily.

[0014] Moreover, since the drive path of image support and an imprint object is separated when one division covering device is opened, rotation of an imprint object and an anchorage device is attained, and ejection of the recording paper can be easily performed also not only in the paper jam between the image support and the imprint objects which were mentioned above by this but in the paper jam in an anchorage device.

[0015] Furthermore, since it is equipped with the imprint object and the anchorage device free [attachment and detachment] inside one division covering device, in inspection and repair of an imprint object and an anchorage device, it can inspect and repair easily.

[0016] Moreover, since the above-mentioned developer tank is allotted under the division covering device of another side, the supply activity of a toner and the inspection and repair of a developer tank in a developer tank can be easily performed by forming the division covering device of another side rotatable, and opening it.

[0017] Furthermore, since it faces performing the above-mentioned inspection and repair, a division covering device is rotated, opened and closed by exceeding and a lateral drawer is not made, it is necessary to take into consideration neither migration of the body of equipment, nor reservation of the tooth space of the longitudinal direction for a cash drawer.

[0018] Therefore, it can inspect and repair easily, without aiming at increase of an installation tooth space.

[0019] Moreover, according to the configuration of claim 2, inside the body of equipment, a developer and image support are in a close condition, and a developer cannot be easily taken out upward only by the upper part being opened wide. However, in this invention, the division covering device of another side is also

formed free [closing motion]. Moreover, under the division covering device of this another side, the support locations migration member which has the interior of a proposal is prepared, and image support is usually supported in the actuated position inside the proposal in a support locations migration member. However, it faces taking out a developer upward and a developer and image support are separated by making the evacuation location inside a proposal move image support to a longitudinal direction. Since balking of a developer is attained and it is lost at this time, a developer can be taken out upward easily. [of the obstruction to facing up]

[0020] Therefore, it can inspect and repair easily, without aiming at increase of an installation tooth space.

[0021] Moreover, in order to take out that image support should be inspected and repaired according to the configuration of claim 3, the division covering device of another side is rotated and opened, and the evacuation location inside a proposal is made to move image support to a longitudinal direction. And since the interior of a proposal is formed that it should show around so that sampling of image support may become free from an evacuation location in the upper part, it can take out image support easily up along this interior of a proposal.

[0022] Moreover, since image support must once be moved to an evacuation location from an actuated position on the occasion of the ejection of image support, the bad influence by the blemish and outdoor daylight to the image support by taking out image support outside carelessly is avoidable.

[0023] Therefore, it can inspect and repair to easy and insurance, without aiming at increase of an installation tooth space.

[0024] Moreover, since the hold section for holding a waste toner in the interior of an imprint object is formed according to the configuration of claim 4, the internal tooth space of an imprint object can be used effectively. For this reason, it is not necessary to take the capacity of a waste toner into consideration, and the volume of a waste toner bottle can fully be secured on the occasion of hold of the waste toner from an imprint object. Moreover, a waste toner can be discarded the whole imprint object by exchanging an imprint object.

[0025] Therefore, the installation tooth space of the waste toner bottle for the waste toner from an imprint object becomes unnecessary, and the miniaturization of the whole equipment can be attained, and it can inspect and repair easily.

[0026]

[Example]

[Example 1] It will be as follows if one example of this invention is explained based on drawing 1 thru/or drawing 7.

[0027] As shown in drawing 2, the laser beam printer equipment as image formation equipment concerning this example equips the pars basilaris ossis occipitalis within the body 1 of equipment with the sheet paper cassette 2 for stocking the sheet-like recording paper (not shown). And the imprint drum 3 as an imprint object is formed in the upper part location of the paper output side (setting to drawing right end side) in this sheet paper cassette 2, and the fixing unit 6 as an anchorage device of this imprint drum 3 which comes to have a heating roller 4 and the sticking-by-pressure roller 5 is further formed in it up.

[0028] On the other hand, in drawing of the above-mentioned imprint drum 3, rather than this imprint drum 3, the photo conductor drum 7 as image support of a minor diameter is formed in left-hand side so that it may corotate in the state of contact to the imprint drum 3. The cleaning unit 9 which has the toner scraping blade 8 which removes the toner which remains on the front face of the photo conductor drum 7 is first arranged in the location of upper right direction by the periphery of this photo conductor drum 7. Sequential arrangement of the 1st which supplies each toner of the electrification machine 12 for electrifying the front face of the photo conductor drum 7 uniformly and yellow Magenta cyanogen black in the counterclockwise direction on the front face of the photo conductor drum 7, respectively - the 4th development counter 13-16 is carried out.

[0029] Moreover, the optical-system unit 17 which builds in the semiconductor laser polygon mirror, ftheta lens, the reflective mirror, etc. which is not illustrated is formed in the location of the upper left in the body 1 of equipment direction. When the outgoing radiation light from this optical-system unit 17 is irradiated and exposed by the front face of the photo conductor drum 7 between the above-mentioned electrification machine 12 and the 1st development counter 13, an electrostatic predetermined latent image is formed in this photo conductor drum 7 front face. If the toner of yellow is supplied when this electrostatic latent image comes to the location which counters the 1st development counter 13, the toner image of yellow will be formed in photo conductor drum 7 front face, and this will be sent in the counterclockwise direction with rotation of the photo conductor drum 7 toward the contacting point a of this photo conductor drum 7 and the

imprint drum 3.

[0030] Next, the configuration prepared in accordance with the conveyance path of the recording paper within the above-mentioned body 1 of equipment is explained with actuation. The pickup roller 21 by which a rotation drive is carried out intermittently is formed above the paper output side edge in said sheet paper cassette 2. Whenever this pickup roller 21 makes one revolution, the form of the topmost part of the recording paper currently loaded in the sheet paper cassette 2 is extruded from a sheet paper cassette 2. This recording paper is further sent to Puri Carl L'Ora (PS roller) 24 prepared near the bottom location in the imprint drum 3 by PURIFIDORORA (PF roller) 22 along the ** typeface-like feed conveyance way 23.

[0031] In addition, when it is prepared in the above-mentioned feed conveyance way 23 in the configuration which branches so that the manual bypass conveyance way 25 may carry out opening to the front face of the body 1 of equipment and feeds paper to an envelope etc., the manual bypass guide which is not illustrated to the above-mentioned opening of the body 1 of equipment is set, and it inserts along with this manual bypass guide. Thereby, the inserted envelope is sent to the PS roller 24 like the above with the manual bypass roller 26 formed in the manual bypass conveyance way 25.

[0032] The PS roller 24 is equipped with the function made to curl so that the peripheral face of the cylinder-like imprint drum 3 may be easy for the recording paper to adsorb, and, in upper roller 24a of the PS roller 24, rigid-body and lower-roller 24b consists of the elastic body of a low degree of hardness. By sending the recording paper through the pressurization part of the shape of radii produced in these pressure-welding parts, this recording paper curls and is sent out.

[0033] The grand roller 27 is arranged in the part of the bottom in the peripheral face of the imprint drum 3 in the state of the pressure welding. The recording paper which curled as mentioned above is sent into this pressure-welding part.

[0034] The outermost layer of a three-tiered structure is formed by the dielectric layer, and, as for the imprint drum 3, the high voltage is impressed from the inside. On the other hand, in case the grand roller 27 is grounded and the recording paper passes through the pressure-welding field of these imprint drum 3 and the grand roller 27, according to the charge accumulated in the dielectric layer inside of the imprint drum 3, induction of the charge is carried out to a recording paper front face, and, thereby, electrostatic adsorption of the recording paper is carried out on the front face of the imprint drum 3. Consequently, adsorption maintenance will be carried out at the imprint drum 3, and the recording paper will rotate in one with this imprint drum 3.

[0035] The recording paper by which the imprint drum 3 was adsorbed is conveyed to the imprint field which is the contact section a of the above mentioned photo conductor drum 7 and the above mentioned imprint drum 3 by carrying out the rotation drive of the imprint drum 3 in the clockwise direction in drawing. In case the recording paper passes through this field, the toner image currently formed in the front face of the photo conductor drum 7 is imprinted by the recording paper according to the potential difference of that charge and charge on the front face of the recording paper.

[0036] In addition, as mentioned above, the development counters 13-16 of each color (yellow Magenta cyanogen black) are arranged at a radial, and the toner cartridges 41-44 (in this drawing, 44 is not shown) as a developer tank are allotted to the surroundings of the photo conductor drum 7 in the near, respectively. And when obtaining a color picture, electrification, exposure, development, and an imprint are repeated for every Isshiki. While the recording paper had been adsorbed by the imprint drum 3 at that time, whenever it rotates and makes one revolution with the imprint drum 3, the imprint of Isshiki is performed, and one color picture is formed by a maximum of 4 rotation.

[0037] On the other hand, between the above-mentioned imprint field and said fixing unit 6 prepared in the upper part, the peripheral face of the imprint drum 3 is made to approach, and the exfoliation pawl 31 is formed. This exfoliation pawl 31 is connected with the solenoid 32 prepared in the side-attachment-wall side of the body 1 of equipment through pivot 33 and the drive arm 34. the alienation whose point of the cusp configuration by the side of a lower limit rotated the exfoliation pawl 31 focusing on the pivot 33, and estranged only a predetermined distance from the peripheral face of the imprint drum 3 by this by carrying out ON/OFF of the above-mentioned solenoid 32 as shown in drawing -- the change of the location of a location and the contact location where a point touches the peripheral face of the imprint drum 3 is performed.

[0038] when carrying out four revolutions of said imprint drum 3 carried out and obtaining a color picture, until the imprint of the last toner image is performed -- the above-mentioned exfoliation pawl 31 -- alienation -- it is held in a location. and -- if the form with which the imprint of the last toner image was performed is sent out from the aforementioned imprint field -- the exfoliation pawl 31 -- alienation -- it is

switched to a contact location from a location.

[0039] Thereby, the recording paper is running aground to the point of the exfoliation pawl 31, exfoliates compulsorily from the peripheral face of the imprint drum 3, and is guided in the direction which goes to said fixing unit 6 along the up lateroversion slant face of this exfoliation pawl 31.

[0040] As mentioned above, the recording paper which exfoliated from the imprint drum 3 with the exfoliation pawl 31, and was sent to the fixing unit 6 is sent upwards through the fixing section which is the pressure-welding section of a heating roller 4 and the sticking-by-pressure roller 5 with the fixing guide 35, and welding of the toner in the record paper is carried out to the recording paper by the temperature and the pressure of the fixing section at this time. And the recording paper sent out from the fixing unit 6 is guided leftward with the upper delivery guide 36, and said optical-system unit 17 is discharged on the wrap top-face covering 38 with the delivery roller 37.

[0041] On the other hand, as the laser beam printer equipment of this example is shown in drawing 2, 2 ****s of the upper parts of the body 1 of equipment are made into order (it sets to this drawing and is right and left). That is, the imprint side division covering device 51 as one division covering device is disengageable in the upper part of the body 1 of equipment from the separation line shown with an alternate long and short dash line. This imprint side division covering device 51 can be freely opened and closed by rotating exceeding focusing on the rotation supporting point 52 prepared near the manual bypass conveyance way 25 (it setting to this drawing and being right-handed rotation), as shown in drawing 1. The interior of this imprint side division covering device 51 is equipped with the imprint drum 3 and the fixing unit 6 free [attachment and detachment].

[0042] Moreover, the development side division covering device 53 as a division covering device of another side is constituted by the optical-system unit 17 and the top-face covering 38, and it can open and close freely by rotating exceeding focusing on the rotation supporting point 54 prepared in the upper limit section of the posterior part (it sets to this drawing and is the left) of the body 1 of equipment (it setting to this drawing and being left-handed rotation). Under this development side division covering device 53, the toner cartridges 41-44 as a developer tank of two or more colors are allotted.

[0043] Here, the processor of a waste toner etc. is explained to the decomposition device list of the breaker style of the imprint side division covering device 51 in the laser beam printer equipment of this example, and the development side division covering device 53, and the body of equipment 1 interior below.

[0044] First, as shown in drawing 3, while the body 1 of equipment is operating, in order to make it the imprint side division covering device 51 not open easily, the imprint side lock pawl 55 is formed in the upper part of the imprint side division covering device 51. Rotation of this imprint side lock pawl 55 is attained by using an abbreviation mid gear as the supporting point. And while the end of the imprint side lock pawl 55 is attached in the elastic bodies 56, such as a spring, the other end of the imprint side lock pawl 55 is formed in the shape of a pawl, and is stopped by the lock boss 57 of the body frame 75 of equipment which is a part for this claw part and is mentioned later.

[0045] Moreover, as shown in drawing 4, rotation of the delivery covering 58 of an about six fixing unit [in the above-mentioned imprint side division covering device 51] part is attained focusing on the rotation supporting point 59, and it is opened. The roller attaching part 46 is attached in the rear face of this delivery covering 58 outside said delivery guide 36 and the delivery roller 37 at the delivery follower roller 45 list.

[0046] When the above-mentioned delivery covering 58 opens, the fixing unit 6 can be taken out. This fixing unit 6 has the fixing frame 62 which holds the vertical exfoliation pawl 49-49, the temperature detection thermistor 50-50, the silicone, pil putt 60, the cleaner putt 61, and these between an arm top cover 47 and a discharge ring 48 outside said heating roller 4 and the sticking-by-pressure roller 5. Moreover, the fixing unit 6 is electrically connected with the body 1 of equipment with the connector which is not illustrated while it is attached in the fixing maintenance plate 63 of the imprint side division covering device 51.

[0047] Furthermore, as shown in drawing 5, the imprint drum 3 can also make the imprint drum unit 64 one unit, and it can detach in this example and attach freely. That is, the imprint drum unit 64 consists of imprint drum frames 69 holding the shutter 68 for carrying out as [fall / on the occasion of removal of blades, such as rubber for removing the toner which remained in the front face of the imprint drum 3 outside the imprint drum 3, a brush 66, the peripheral surface conveyance conveyor 67 that sends out a toner to the side-face side of the imprint drum 3 so that it may mention later, and the imprint drum unit 64 / a waste toner], and these.

[0048] Moreover, as shown in drawing 3, a waste toner is discarded in this example by the waste toner box 70 in which the imprint side division covering device 51 in the body 1 of equipment was formed caudad. It

has the above-mentioned peripheral surface conveyance conveyor 67 for leading the waste toner scratched from the peripheral surface of the imprint drum 3 to the 1 side-face side of the imprint drum 3 as structure for this, and the side-face conveyance conveyor 71 for connecting with this peripheral surface conveyance conveyor 67, and leading this waste toner to the waste toner box 70. The screw 72 is formed in the interior of these peripheral surface conveyance conveyor 67 and the side-face conveyance conveyor 71, and conveyance of a waste toner is attained by this.

[0049] Furthermore, the conveyance pipe 73 is aslant attached in the edge of the above-mentioned side-face conveyance conveyor 71, and the waste toner scratched with said toner scraping blade 8 passes this conveyance pipe 73, and is led to the waste toner box 70.

[0050] On the other hand, as shown in drawing 3, the above-mentioned development side division covering device 53 has the development side lock pawl 91 at the edge, and this development side lock pawl 91 is stopped by the lock boss 57 as shown in drawing 6 in the condition of having closed the development side division covering device 53. In addition, the electric discharge lamp 74 which irradiates the front face of the photo conductor drum 7 uniformly, carries out neutralization removal of the electrification, and is made into an initial state is formed in this development side lock pawl 91.

[0051] Moreover, the photo conductor drum 7 is formed so that the rotation support shaft 77 may be guided at the guide rail 76 as the interior of a proposal formed in the body frame 75 of equipment as a support locations migration member prepared near the background of the skin of the body 1 of equipment. This guide rail 76 is formed in the abbreviation configuration for L characters. And when it becomes the actuated position A which is the usual actuated position when the rotation support shaft 77 is arranged on the edge of L characters in a guide rail 76 and the rotation support shaft 77 is moved to a longitudinal direction at the corner of L characters in a guide rail 76, the photo conductor drum 7 serves as the evacuation location B evacuated from the above-mentioned actuated position A, as shown in drawing 7.

[0052] The abbreviation horseshoe-shaped presser-foot plate 78 is mostly formed in the above-mentioned body frame 75 of equipment free [rotation] centering on the central shaft 79. This presser-foot plate 78 will be in the condition that the end section projected from the body 1 of equipment to the upper part with the spring which is not illustrated, when the development side division covering device 53 is changed into an opening condition. And when changing the development side division covering device 53 into a lidding condition, as shown in drawing 6, the edge of the development side division covering device 53 presses down, it presses down in contact with the end section of a plate 78, and a plate 78 is rotated around a shaft 79. Since the other end of the presser-foot plate 78 presses the rotation support shaft 77 of an actuated position A at this time, the photo conductor drum 7 is fixed to this actuated position A.

[0053] Moreover, when the upper limit section of L characters is in the opening condition and carries out upper part migration of the photo conductor drum 7 by this, it can show this photo conductor drum 7 to a guide rail 76 so that sampling may become free from the evacuation location B.

[0054] Namely, as shown in drawing 1, balking of the above-mentioned photo conductor drum 7 is attained by making the photo conductor unit 80 into one unit. This photo conductor unit 80 consists of photo conductor frames 84 holding the cleaning unit 9 and these which have the electrification electrodes 81, such as said electrification machine 12, and a wire, a needle electrode with which the interior of this electrification machine 12 was equipped, said toner scraping blade 8 and the waste toner conveyance roller 82, and the toner receptacle sheet 83 outside the photo conductor drum 7 which has the rotation support shaft 77.

[0055] Black development unit 85b as a developer which, on the other hand, has color development unit 85a, the 4th development counter 16, and toner cartridge (not shown) as a developer which have the above 1st - the 3rd development counter 13-15, and toner cartridges 41-43 by this example as shown in drawing 7 is removable as one unit respectively. The above-mentioned color development unit 85a has the above 1st - the 3rd development counter 13-15, and toner cartridges 41-43. To each of each development counters 13-15 As an object for colors The toner in the MG roller 87 for carrying out magnetic brush contact of the toner, the toner concentration sensor 88 which detects toner concentration, and a toner hopper on the front face of the mix roller 86-86 for the frictional electrification of a toner and a carrier, and the photo conductor drum 7 In order to keep constant the toner conveyance roller 89-89-89 to convey and toner concentration, the toner supply roller 90 which supplies a toner is formed. Moreover, the mix roller 86 which has the same function also about black development unit 85b, the MG roller 87, the toner concentration sensor 88, the toner conveyance roller 89, and the toner supply roller 90 are formed.

[0056] In the laser beam printer equipment which has the above-mentioned configuration, the actuation when inspecting and repairing the interior of the body 1 of equipment is explained below.

[0057] When first a paper jam arises and this is removed, as shown in drawing 6, it cancels of the lock boss 57 (refer to drawing 3) by operating the lever which does not illustrate the imprint side lock pawl 55 of the imprint side division covering device 51. Subsequently, it rotates to exceed focusing on the rotation supporting point 52 (it sets to this drawing and is right-handed rotation), and this imprint side division covering device 51 is opened. The contact condition of the photo conductor drum 7 and the imprint drum 3 is canceled by this. Consequently, the recording paper currently held between the photo conductor drum 7 and the imprint drum 3 can be exposed, and the recording paper can be removed easily.

[0058] Moreover, when the imprint side division covering device 51 is opened, the drive path of the photo conductor drum 7 and the imprint drum 3 is separated. For this reason, rotation of the imprint drum 3, the heating roller 4 in the fixing unit 6, and the sticking-by-pressure roller 5 is attained, and when a paper jam is carried out into the fixing unit 6 by this, ejection of the recording paper can be performed easily.

[0059] Next, supply actuation of a toner is explained. When supplying a toner, as shown in drawing 3, it cancels of the lock boss 57 by operating the lever which does not illustrate the development side lock pawl 91 in the development side division covering device 53 of the body of equipment 1 upper part. Subsequently, the rotation supporting point 54 is rotated as a core to exceed the development side division covering device 53 (it sets to this drawing and is left-handed rotation), and it opens. Since the toner cartridges 41-44 of color development unit 85a and black development unit 85b ("development unit 85a and 85b" are called hereafter) are exposed, these toner cartridges 41-44 are easily exchangeable with this.

[0060] Next, the actuation when inspecting and repairing [exchange] each unit of the body of equipment 1 interior is explained.

[0061] The case where the imprint drum 3 and the fixing unit 6 in the imprint side division covering device 51 are exchanged for the beginning is explained. In addition, the purpose which exchanges the imprint drum 3 is for the front face of the imprint drum 3 to deteriorate and for the imprint engine performance to fall by using the imprint drum 3 for a long period of time. the front face by the contact to the blade at the time of removing the toner which adhered too much in the time of removing the toner which adhered too much during operation of the imprint drum 3, for example as a reason of the above-mentioned surface degradation, or a paper jam, or the front face of a brush 66, exfoliation of the recording paper to which it stuck, or the exfoliation pawl 31 -- rubbing -- etc. -- it is.

[0062] In exchanging the imprint drum 3, as shown in drawing 5, the imprint drum unit 64 is exchanged as one, and it opens the imprint side division covering device 51 like actuation of the above-mentioned paper jam. Subsequently, it dissociates from the side-face conveyance conveyor 71, and the imprint drum unit 64 is removed. In addition, since the joining segment of the peripheral surface conveyance conveyor 67 and the side-face conveyance conveyor 71 will be in an opening condition at this time, a shutter 68 is closed so that a toner may not fall.

[0063] Next, in exchanging the fixing unit 6, as shown in drawing 4, it is in the condition which opened the imprint side division covering device 51, and further, the rotation supporting point 59 is rotated as a core, and it opens the wrap delivery covering 58 for the fixing unit 6. And the fixing unit 6 is removed and exchanged from the fixing maintenance plate 63.

[0064] Next, the case where exchange etc. carries out development unit 85a and 85b, and the photo conductor unit 80 is explained. In exchanging development unit 85a and 85b, as shown in drawing 3, it opens the development side division covering device 53 like the time of exchange of an above-mentioned toner. Development unit 85a and 85b cannot be taken out up, opening the development side division covering device 53, since development unit 85a and 85b, and the photo conductor drum 7 were in the close condition at this time.

[0065] However, in this example, since the photo conductor drum 7 can be evacuated from an actuated position A to the lateral evacuation location B along with a guide rail 76, ejection to the upper part of development unit 85a and 85b can be performed.

[0066] That is, after opening the imprint side division covering device 51 as shown in drawing 7 when taking out development unit 85a and 85b, the development side division covering device 53 is also opened. When this development side division covering device 53 is opened, it rotates in the counterclockwise direction centering on a shaft 79 with the spring which the presser-foot plate 78 does not illustrate. For this reason, since immobilization in the actuated position A of the guide rail 76 in the rotation support shaft 77 of the photo conductor drum 7 is canceled, along with a guide rail 76, the migration of the rotation support shaft 77 in a longitudinal direction is attained. Then, the rotation support shaft 77 of the photo conductor drum 7 is moved to a longitudinal direction to the evacuation location B from the actuated position A of the

guide rail 76 in the body frame 75 of equipment. Since the close condition of development unit 85a and 85b, and the photo conductor drum 7 is canceled by this, as shown in this drawing, development unit 85a and 85b can be taken out up, respectively, and can be exchanged by it. In addition, since said toner cartridge 44 used for black development unit 85b has the large volume, it leaves the toner hopper area which holds a toner cartridge 44 and which is not illustrated to the body 1 side of equipment, and secedes from it with black development unit 85b at the joint which is not illustrated.

[0067] Moreover, in drawing 7, when exchanging the photo conductor unit 80, since it starts perpendicularly from the evacuation location B of the photo conductor drum 7 and opening of the upper limit is carried out, a guide rail 76 can take out and exchange the photo conductor unit 80 easily by raising the photo conductor unit 80 up as it is.

[0068] Thus, the laser beam printer equipment of this example When a paper jam is caused between the imprint drum 3 and the photo conductor drum 7 Since 2 ****s of the upper parts of the body 1 of equipment are made into order, and they are formed in it at least free [closing motion by rotation] for the imprint side division covering device 51 and the interior of the imprint side division covering device 51 is equipped with the imprint drum 3 and the fixing unit 6 By opening this imprint side division covering device 51, the contact condition of the photo conductor drum 7 and the imprint drum 3 is canceled. Consequently, the recording paper currently held between the photo conductor drum 7 and the imprint drum 3 can be exposed, and the recording paper can be removed easily.

[0069] Moreover, since the drive path of the photo conductor drum 7 and the imprint drum 3 is separated when the imprint side division covering device 51 is opened, rotation of the imprint drum 3, the heating roller 4 in the fixing unit 6, and the sticking-by-pressure roller 5 is attained, and, also in the paper jam in the fixing unit 6, this can perform ejection of the recording paper easily.

[0070] Furthermore, since it is equipped with the imprint drum 3 and the fixing unit 6 free [attachment and detachment] inside the imprint side division covering device 51, in inspection and repair of the imprint drum 3 and the fixing unit 6, it can inspect and repair easily.

[0071] Moreover, since two or more toner cartridges 41-44 are allotted to the lower part of the development side division covering device 53, the supply activity of the toner in toner cartridges 41-44 can be easily done by rotating and opening the development side division covering device 53.

[0072] Furthermore, since it faces performing the above-mentioned inspection and repair, the imprint side division covering device 51 and the development side division covering device 53 are rotated and the upper part of the body 1 of equipment is opened and closed, a drawer is not made in a longitudinal direction. For this reason, it is necessary to take into consideration neither migration of the body 1 of equipment, nor reservation of the tooth space of the longitudinal direction for a cash drawer.

[0073] Therefore, it can inspect and repair easily, without aiming at increase of an installation tooth space. Moreover, thereby, it is not accompanied by the increment in weight of equipment, without inviting the increment in cost.

[0074] While the development side division covering device 53 is formed free [closing motion] in this example, moreover, under the development side division covering device 53 Although the body frame 75 of equipment which has a guide rail 76 is formed and the photo conductor drum 7 is usually supported in the actuated position A of the guide rail 76 in the body frame 75 of equipment It faces taking out development unit 85a and 85b upward, and development unit 85a and 85b, and the photo conductor drum 7 are separated by making the evacuation location B of a guide rail 76 move the photo conductor drum 7 to a longitudinal direction. Consequently, since balking of development unit 85a and 85b is attained and it is lost also when development unit 85a and 85b, and the photo conductor drum 7 are close, development unit 85a and 85b can be taken out upward easily. [of the obstruction to facing up]

[0075] Therefore, it can inspect and repair easily, without aiming at increase of an installation tooth space.

[0076] Furthermore, in order to take out that the photo conductor drum 7 should be inspected and repaired, the development side division covering device 53 is rotated and opened, and the evacuation location B of a guide rail 76 is made to move the photo conductor drum 7 to a longitudinal direction. Since the guide rail 76 is formed that it should show around so that sampling of the photo conductor drum 7 may become free from the evacuation location B in the upper part, it can take out the photo conductor drum 7 easily up along with a guide rail 76.

[0077] Moreover, since the photo conductor drum 7 must once be moved to the evacuation location B from an actuated position A on the occasion of the ejection of the photo conductor drum 7, it becomes possible to avoid the bad influence by the blemish and outdoor daylight to the photo conductor drum 7 by taking out the photo conductor drum 7 outside carelessly. Therefore, it can inspect and repair to easy and insurance,

without aiming at increase of an installation tooth space.

[0078] In addition, although the interior of a proposal is formed by the guide rail 76 in this example, it is also possible for it not to necessarily be limited to this, for example, to show around by a rail etc.

[0079] [Example 2] It will be as follows if other examples of this invention are explained based on drawing 8 and drawing 9. In addition, about the member shown in the drawing of the aforementioned example 1 for convenience of explanation, and the member which has the same function, the same sign is attached and the explanation is omitted.

[0080] The hold section 101 for the laser beam printer equipment of this example to hold a waste toner in the interior of the imprint drum 3, as shown in drawing 8 and drawing 9 is formed. And in this example, the edge of the side-face conveyance conveyor 71 established in the side face of the imprint drum 3 is bent in the direction of an axis of the imprint drum 3, and penetrating is carried out to the flange 102 towards the hold section 101. Outer fitting of the bearing 103 fixed to the flange 102 is carried out to the penetrating part to the flange 102 of the side-face conveyance conveyor 71, and between a bearing 103 and the penetrating sections of the side-face conveyance conveyor 71 slides. Moreover, the imprint drum frame 69 is formed in the periphery of a bearing 103 through the bearing 104, and only the imprint drum 3 may have comes to rotate free by these bearings 103-104.

[0081] When the waste toner of the imprint drum 3 which failed to be scratched is held in the hold section 101 which passed the peripheral surface conveyance conveyor 67 and the side-face conveyance conveyor 71, and was formed in the interior of the imprint drum 3 and the imprint drum unit 64 is exchanged by the above-mentioned configuration, it is discarded together.

[0082] Thus, since the hold section 101 for holding a waste toner in the interior of the imprint drum 3 is formed, the laser beam printer equipment of this example can use the internal tooth space of the imprint drum 3 effectively. For this reason, it is not necessary to take into consideration the capacity of the waste toner from the imprint drum 3, and the volume of a waste toner bottle can fully be secured on the occasion of hold of the waste toner from the photo conductor drum 7. Moreover, a waste toner can be discarded the whole imprint drum 3 by exchanging the imprint drum 3.

[0083] Therefore, the installation tooth space of the waste toner box 70 for the waste toner from the imprint drum 3 becomes unnecessary, and the miniaturization of the whole equipment can be attained, and it can inspect and repair easily.

[0084]

[Effect of the Invention] The image formation equipment of invention of claim 1 is the configuration that a developer tank and image support are allotted under the division covering device of another side, while 2 ****s is carried out to order, one [at least] division covering device is formed in it free [closing motion] of rotation and the interior of above-mentioned one division covering device is equipped with the upper part of the body of equipment free [attachment and detachment of the above-mentioned imprint object and an anchorage device] as mentioned above.

[0085] Thereby, when a paper jam is caused between an imprint object and image support, the contact condition of image support and an imprint object is canceled by opening one division covering device. Consequently, the recording paper currently held between image support and an imprint object can be exposed, and the recording paper can be removed easily. Moreover, since the drive path of image support and an imprint object is separated when one division covering device is opened, rotation of an imprint object and an anchorage device is attained, and this can perform ejection of the recording paper easily also not only in the paper jam between image support and an imprint object but in the paper jam in an anchorage device.

[0086] Furthermore, since it is equipped with the imprint object and the anchorage device free [attachment and detachment] inside one division covering device, in inspection and repair of an imprint object and an anchorage device, it can inspect and repair easily.

[0087] Moreover, since the developer tank is allotted under the division covering device of another side, the supply activity of a toner and the inspection and repair of a developer tank in a developer tank can be easily performed by forming the division covering device of another side rotatable, and opening it.

[0088] Furthermore, since it faces performing the above-mentioned inspection and repair, a division covering device is rotated, opened and closed by exceeding and a lateral drawer is not made, it is necessary to take into consideration neither migration of the body of equipment, nor reservation of the tooth space of the longitudinal direction for a cash drawer.

[0089] Therefore, the effectiveness that it can inspect and repair easily is done so, without aiming at increase of an installation tooth space.

[0090] While the division covering device of another side is also formed free [closing motion], in the

image formation equipment of claim 1, the image formation equipment of invention of claim 2 as mentioned above under the division covering device of this another side While the support locations migration member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position The above-mentioned developer is a configuration prepared so that balking may become free, when image support evacuates to an evacuation location.

[0091] Thereby, it faces taking out a developer upward and a developer and image support are separated by moving image support to the evacuation location inside a proposal. Since balking of a developer is attained and it is lost at this time, even when a developer and image support are close, a developer can be taken out upward easily. [of the obstruction to facing up]

[0092] Therefore, the effectiveness that it can inspect and repair easily is done so, without aiming at increase of an installation tooth space.

[0093] While the division covering device of another side is also formed free [closing motion], in the image formation equipment of claim 1, the image formation equipment of invention of claim 3 as mentioned above under the division covering device of this another side The support locations migration member which has the interior of a proposal for making it move to the evacuation location which supports image support is prepared in the actuated position which supports the above-mentioned image support in an actuated position, and the location which evacuated from this actuated position. And this interior of a proposal is a configuration currently formed that image support should be guided so that sampling may become free from an evacuation location.

[0094] In order for this to take out that image support should be inspected and repaired, the division covering device of another side is rotated and opened, and image support is moved to the evacuation location inside a proposal. Since this interior of a proposal is formed that it should show around so that sampling of image support may become free from an evacuation location in the upper part, it can take out image support easily up along this interior of a proposal.

[0095] Moreover, since image support must once be moved to an evacuation location from an actuated position on the occasion of the ejection of image support, it becomes possible to avoid the bad influence by the blemish and outdoor daylight to the image support by taking out image support outside carelessly.

[0096] Therefore, easy and the effectiveness that it can inspect and repair safely are done so, without aiming at increase of an installation tooth space.

[0097] The image formation equipment of invention of claim 4 is the configuration that the hold section for holding a waste toner in the interior of an imprint object is formed in the image formation equipment of claim 1 as mentioned above.

[0098] Thereby, the internal tooth space of an imprint object can be used effectively. For this reason, it is not necessary to take the capacity of a waste toner into consideration, and the volume of a waste toner bottle can fully be secured on the occasion of hold of the waste toner from an imprint object. Moreover, a waste toner can be discarded the whole imprint object by exchanging an imprint object.

[0099] Therefore, the installation tooth space of the waste toner from an imprint object becomes unnecessary, the miniaturization of the whole equipment can be attained and the effectiveness that it can inspect and repair easily is done so.

[Translation done.]

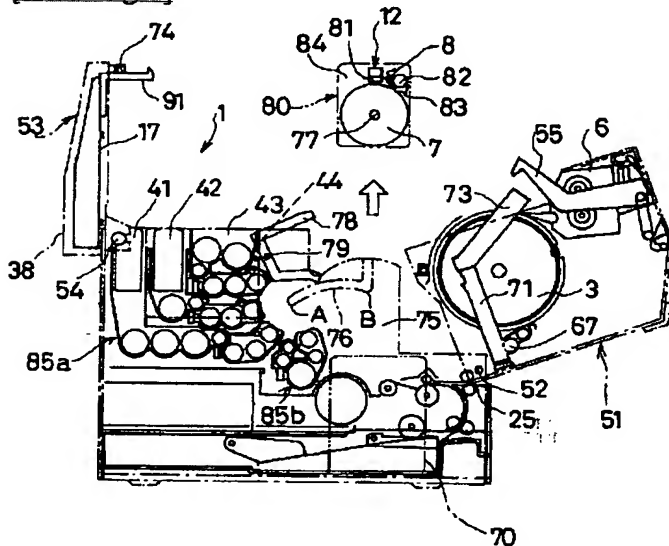
* NOTICES *

JPO and NCIP are not responsible for any damages caused by the use of this translation.

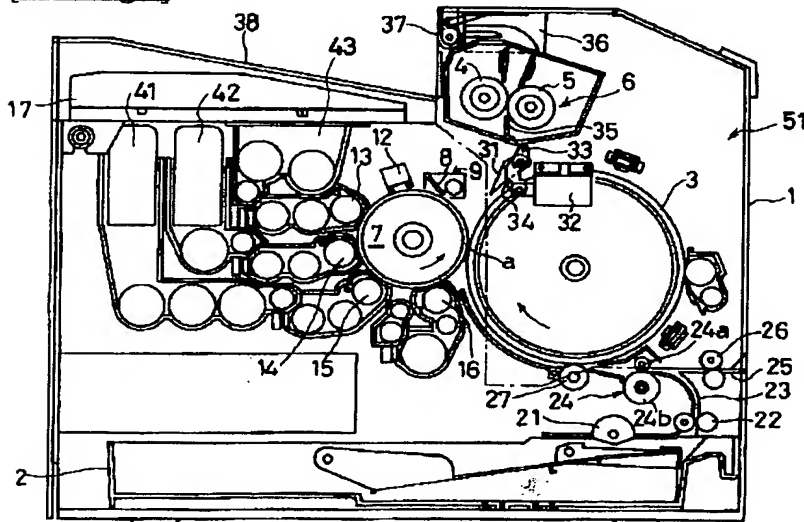
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

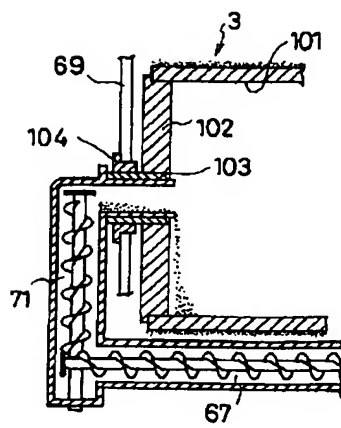
[Drawing 1]



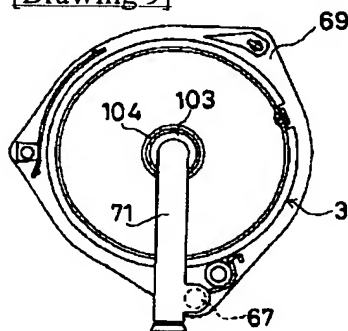
[Drawing 2]



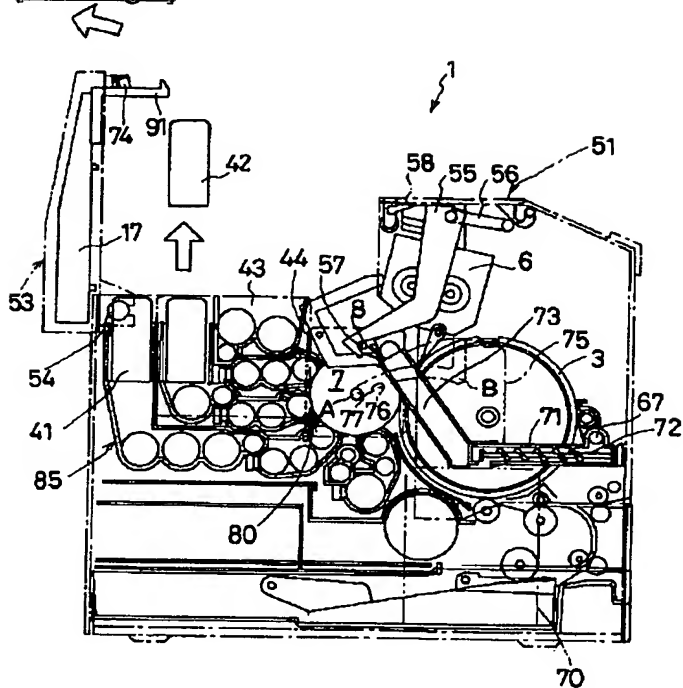
[Drawing 8]



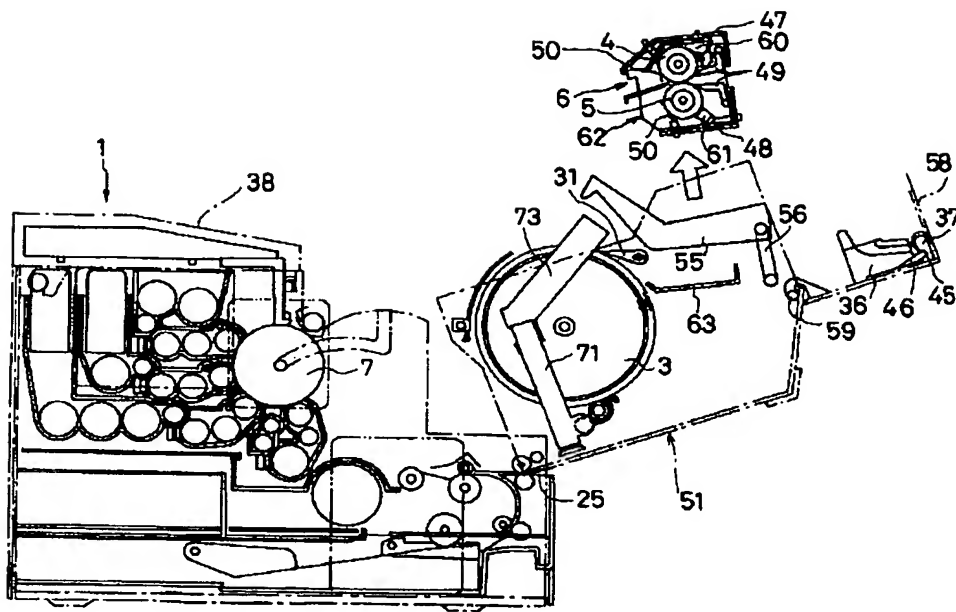
[Drawing 9]



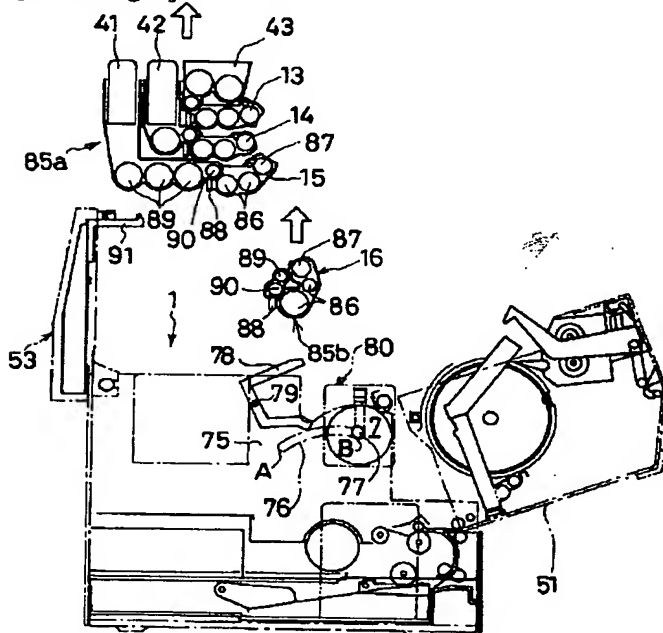
[Drawing 3]



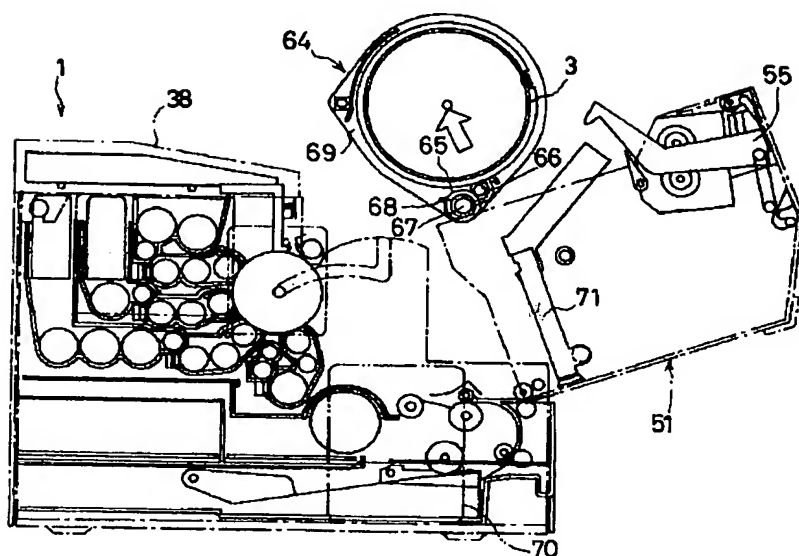
[Drawing 4]



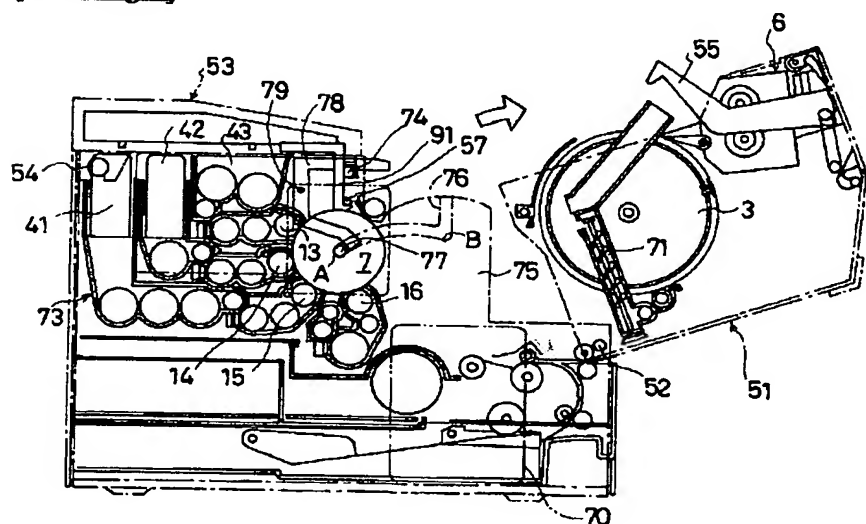
[Drawing 7]



[Drawing 5]



[Drawing 6]



[Translation done.]